[0044]Fig 2 presents the essence of the present invention in a preferred embodiment wherein a dual layer protective jacket over an insulated wire is shown, 15. The inner flame retardant jacket, 22, comprises a polyolefin resin base containing a non halogen flame retardant additive such as aluminum trihydrate or magnesium hydroxide. Preferred base resins would include polyolefins such as ethylene vinylacetate (EVA), ethylene ethylacrylate (EEA), linear low density polyethylene (LLDPE), very low density polyethylene (VLDPE), methallocene or single site resins and polypropylenes. The preferred resins are EVA and EEA and the preferred flame retardant additive is magnesium hydroxide. <u>The comonomer content of resin is in the range of 10-50% based on the weight of the copolymer and has a melt indexin the range of 1-50 grams per 10 minutes.</u> Commercial compounds considered as suitable examples above include Dow/Union Carbide DFD-1638 and DFD-1683. The thickness of the inner layer may vary over a range between 5-50 mils. The outer layer, 24, performs the functions of providing flame retardance, thermal insulation and mechanical and physical protection to the elements within. The layer, 24, comprises a polypropylene base resin containing an intumescent filler additive. <u>The exact level of intumescent additive is not critical but should be sufficient for the application. Generally levels from 2 to 100 parts by weight of the base resin are sufficient.</u> Representative of suitable instumescents include:

Maxichar Activated Phosphate Blend (Broadview Technologies); Maxichar/Melamine (50/50);
Fyrol MP Melamine Phosphate (Akzo); Fyrol MP/Melamine (50/50);
AC-2 Melamine Pyrophosphate (Alllied Anhydrides & Chemicals); AC-2/Melamine (50/50);
FR Cros 484 Ammonium Polyphosphate (Bundenheim); FR Cros 484/Melamine (50/50);
Phos-Chek P-30 Ammonium Polyphosphate (Monsanto)/Melamine (50/50);
Hostaflam AP 422 (Clariant)/Melamine (50/50);
AC-3 Ethylene Diamine Phosphate (Alllied Anhydrides & Chemicals); AC-3/Melamine (50/50)

The preferred intumescent additives are Maxichar, Fyrol MP and AC-2 and the Melamine mixtures.

Layer 24 in a fire situation decomposes to form a thermally insulating char in front of the flame propagation. The rapidly formed char protects the underlying cable components from both premature combustion and from any significant heat buildup that otherwise would occur. In this way the non halogen flame retardant polyolefin inner layer, 22, is held in reserve to provide flame retardance over a prolonged test time. Non halogen FR provided through metal hydrate utilized a mechanism dependent on endothermic release and vaporization of water from the metal hydrate filler. The longer this release is delayed and the lower the temperature prior to combustion the more efficient is the mechanism for flame retardance. Rapid heat up of non halogen FR polyolefin based on metal hydrate, without the intumescent layer, shows an initial delay in combustion until the area of the flame impingement exhausts the metal hydrate. Once the hydrate is exhausted very rapid flame propagation ensues. The high temperature of the uninsulated cable effectively reduces the level of flame retardance provided by metal hydrate. The intumescent outer layer of the present invention protects against this heat buildup and will improve resistance to flame spread once ignition commences.

Fig 3 shows another embodiment, 20, of the invention. This construction is commonly employed in communication cables installed in risers and plenums. Herein a bundled core of paired insulated wires, 10, is optionally covered with a flexible wrap, 26, that may be a woven fiber glass tape, said tape may or may not contain a coating of a ceramic heat and electrical insulating filler such as mica. Alternatively the flexible wrap can be a flame retardant plastic film such as PTFE (Teflon*), polymide (Kapton*), silicones and polyesters (Mylar*). The bundled core is protected with the dual layer jacket consisting of the non halogen flame retardant